

serializing the storage data using storage encapsulation protocol headers to generate serialized storage data;

A encapsulating the serialized storage data using a simple transport protocol to generate simple transport protocol data segments of the storage data; and

encapsulating each of the simple transport protocol data segments into Ethernet frames.

2. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the serializing of the storage data using storage encapsulation protocol headers to generate serialized storage data includes:

receiving the storage data, the storage data including one or both of commands and data, the commands including write commands, read commands, control commands, and status commands;

selecting portions of the received storage data to be serialized, the selected portions including commands and data; and

appending storage encapsulation protocol headers to each of the selected portions.

3. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the encapsulating of the serialized storage data using a simple transport protocol to generate simple transport protocol data segments of the storage data includes:

selecting portions of the serialized storage data; and

appending simple transport protocol headers to the selected portions to generate the simple transport protocol data segments of the storage data.

4. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the encapsulating of each of the simple transport protocol data segments into Ethernet packets includes:

generating media access controller (MAC) header;

appending the simple transport protocol segments to the MAC header; and

appending a cyclic redundancy check (CRC) to the simple transport protocol segments.

5. A method for processing storage data that is to be communicated over a network as recited in claim 3, wherein the simple transport protocol headers each include at least a handle field, a type field, a length field, a sequence number field, and an acknowledgment field.

6. A method for processing storage data that is to be communicated over a network as recited in claim 5, wherein the handle field is used to exchange a handle during the commencement of a session, the handle being exchanged between a initiator and a target of the network.

7. A method for processing storage data that is to be communicated over a network as recited in claim 5, wherein the sequence number field is configured to count Ethernet frames.

8. A method for processing storage data that is to be communicated over a network as recited in claim 5, wherein the acknowledgment field is used to exchange positive and negative acknowledgments of transactions.

9. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the storage encapsulation protocol contains a tag so that data segments and data segments of the storage data can be matched to a correct command.

10. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the STP transport protocol is configured to provide a stream of bytes arriving in the same order as they were sent.

11. A method for processing storage data that is to be communicated over a network as recited in claim 1, further comprising:

appending an IP header to each of the simple transport protocol data segments.

12. A method for processing storage data that is to be communicated over a network as recited in claim 1, wherein the storage data is selected from one of SCSI data, ATAPI data, and UDMA data.

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13. (Amended) A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol, comprising:

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providing data having a peripheral device protocol format, the data to be communicated over the Ethernet network;

selecting portions of the data;

attaching storage encapsulation protocol (SEP) headers to the selected portions of the data;

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attaching simple transport protocol (STP) headers to one or more of the selected portions having the SEP headers to produce STP packets; and

encapsulating the STP packets into Ethernet frames for communication over the Ethernet network.

14. A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol as recited in claim 13, wherein the peripheral device protocol format is one of a SCSI format, an ATAPI format, and a UDMA format.

15. A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol as recited in claim 13, wherein the STP headers include at least a handle field, a type field, a length field, a sequence number field, and an acknowledgment field.

16. A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol as recited in claim 15, wherein the handle field is used to exchange a handle during the commencement of a session, the handle being exchanged between a initiator and a target of the network.

17. A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol as recited in claim 15, wherein the sequence number field is configured to count Ethernet frames.

18. A method for communicating storage data over an Ethernet network using a non-TCP lightweight transport protocol as recited in claim 15, wherein the acknowledgment field is used to exchange positive and negative acknowledgments of transactions.

19. A method for communicating data over an Ethernet network using a non-TCP lightweight transport protocol, comprising:

providing data having a virtual interface format, the data to be communicated over the Ethernet network;

selecting portions of the data;

attaching simple transport protocol (STP) headers to the selected portions of the data to produce STP packets; and

encapsulating the STP packets into Ethernet frames for communication over the Ethernet network.

20. A method for communicating data over a network using a non-TCP lightweight transport protocol, comprising:

providing data, the data to be communicated over the network;

selecting portions of the data;

attaching simple transport protocol (STP) headers to the selected portions of the data to produce STP packets; and

encapsulating the STP packets into frames for communication over the network.

21. A method for communicating data over a network using a non-TCP lightweight transport protocol as recited in claim 20, wherein the data is one of storage data, network data, file data, and virtual interface data.

22. A method for communicating data over a network using a non-TCP lightweight transport protocol as recited in claim 20, wherein the network is configured to communicate storage data.

Remarks

The Examiner is thanked for the careful review of this application. Claims 1 and 13 were amended to correct typographical errors and better define that which the Applicants consider to be the invention. Claims 1-22 are pending.

Rejections under 35 U.S.C. § 102

Claims 1-22 were rejected under 35 U.S.C. 102(e) as being clearly anticipated by Muller et al. (U.S. Patent No. 6,453,360) ("Muller"). This rejection is respectfully traversed. Although there are numerous differences between Muller and the claimed inventions, only a few will be discussed below for sake of brevity.

For a section 102 rejection to be valid, the cited prior art reference must disclose all elements of the claimed inventions. As is well known, a claim is anticipated only if each and every element as set forth in the claim is found, and the identical invention must be shown in as complete detail as is contained in the claim. Applicants respectfully submit that Muller does not disclose all elements of independent claims 1, 13, 19, and 20. With regard to claim 1, Applicants respectfully submit that the portions of Muller cited by the Office does not disclose usage of storage encapsulation protocol (SEP) or simple transport protocol (STP).

Therefore, the Muller fails to disclose all of the elements of claim 1 as required under a section 102 rejection.

Applicants respectfully submit that the portions of Muller cited by the Office does not discuss or even mention utilization of a simple transport protocol. Muller teaches usage of TCP for a layer 4 header (see, e.g., column 21, lines 45-55, column 22, lines 50-67) but does not state or suggest that STP should be utilized. In addition, Applicants respectfully submit that the portions of Muller cited by the Office does not disclose usage of a storage encapsulation protocol header as claimed by the claimed inventions. In fact, SEP is not mentioned at all by the portions of Muller cited by the Office. Therefore, Applicants respectfully submit that Muller does not disclose each and every element as claimed by the claimed inventions as is required in a section 102 rejection.

In addition, with respect to independent claim 13, because Muller does not disclose usage of STP or SEP as discussed above, Muller does not disclose each and every element claimed in claim 13 and therefore Muller does not anticipate the claimed subject matter of claim 13. Therefore, Applicants respectfully submit that claim 13 is allowable for at least the reasons discussed above with respect to claim 1.

With respect to independent claims 19 and 20, as described above, the portions of Muller cited by the Office does not disclose usage of STP. Therefore, Applicants respectfully submit that Muller does not disclose every element of the claimed inventions as is required under a section 102 rejection. Consequently, Applicants submit that claims 19 and 20 are allowable.

With regard to the dependent claims, the Applicants submit that the cited prior art references do not disclose all the elements of the dependent claims and traverse the rejection of those claims. In addition, the dependent claims are submitted to be patentable for at least the same reasons as independent claims 1 and 13, 19, and 20 are patentable over the cited art of record.

Applicants respectfully submit that all of the pending claims are in condition for allowance. Accordingly, a notice of allowance is respectfully requested. If the Examiner has any questions concerning the present amendment, the Examiner is kindly requested to contact the undersigned at (408) 749-6900, ext. 6911. If any fees are due in connection with filing this amendment, the Commissioner is authorized to charge Deposit Account No. 50-0805 (Order No. ADAPP085B). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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